

REMARKS

Claims 11-15, 30-33, 37-39, and 41-50 are pending in this Application. No new matter is added. Reconsideration in view of the following remarks is respectfully requested.

I. Claim Rejections – 35 U.S.C. § 103

The Office Action rejected claims 11-15, 30-33, 37-38, and 41-46 under 35 U.S.C. § 103(a) as being unpatentable over Olson (US 6,727,602), in view of Nishihara (US 6,522,902), in view of Koenck (US 2004/0018851), and further in view of Andrieu (US 5,336,568); and rejected claims 39 and 47-50 under 35 U.S.C. § 103(a) as being unpatentable over Olson in view of Nishihara, Koenck, Andrieu, and further in view of Choo (US 6,452,362). Applicants respectfully traverse these rejections, as follows.

The Applicants disclose a novel and unobvious approach for extending battery life in an electronic device having a first battery and a second battery. This is achieved by first determining whether a voltage differential exists between the first battery and the second battery. If no voltage differential exists between the first and second batteries, a determination is then made as to whether the device is operating in the traffic state or the idle state. Then, based on the operating state, it is determined whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the device.

A. Claim 30

The above concept is captured in claim 30, which recites, *inter alia*, “a power management module configured to determine whether the processor is operating in the traffic state or the idle state, and, based on the operating state of the processor, the power management module being further configured to determine whether to operate each of the first and second

batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the processor, wherein the power management module is further configured to operate each of the first and second batteries in the pulse current discharge mode ... when the wireless communications device is in the traffic state.”

In rejecting claim 30, the Examiner acknowledges that Olson, Nichihara, and Koenck fail to disclose a power management module configured to determine whether the processor is operating in the traffic state or the idle state, and, *based on the operating state* of the processor, *determine whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the processor*, wherein the power management module is further configured to *operate each of the first and second batteries in the pulse current discharge mode ... when the wireless communications device is in the traffic state*, as recited in amended claim 30. The Examiner, however, at pages 11-12 of the Office Action, relies on Andrieu for this feature. Specifically, the Examiner asserts that “Andrieu teaches a wireless communication device ... wherein operating each of the first and second batteries in series connected mode is operating each of the first and second batteries in a pulse current discharge mode.” The Examiner then alleges that, because “the combination of Olson, Nishihara, and Koenck suggests that a heavy current is needed for operation on traffic state and operation of a series connected dual battery during traffic state, ... and because Andrieu suggests that a dual battery system should be operated in a pulse discharge mode during heavy current requirement,” it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Olson, Nishihara, Koenck, and Andrieu “in order to satisfy the heavy current requirement during traffic operation.” The Applicants respectfully disagree.

Specifically, the Applicants respectfully submit that the Examiner's reason for combining the references is erroneous because there is no motivation in Andrieu to implement the pulse current discharge mode as recited in claim 30.

The Examiner points to col. 2, lines 25-27, and col. 5, lines 5-6, of Andrieu when asserting motivation for using pulse current discharge mode of Andrieu instead of the series connected mode of Nishihara during a traffic state. These sections of Andrieu, however, do not suggest that it is preferable to use pulse current discharge mode during the traffic state. Andrieu merely describes how overlapping the intervals of time during which the battery cells are connected to the load avoids interruptions in power supply and, thus, avoids the use of a large capacitor during heavy current applications. One of ordinary skill in the art would not be motivated to replace Nishihara's series connected mode with Andrieu's overlapping pulse mode because the series connected mode inherently provides an uninterrupted continuous supply and does not require the use of a capacitor to maintain a continuous power supply to the load during heavy current applications. In view of Andrieu's disclosure, those skilled in the art may just as likely choose to implement Andrieu's pulse mode during the idle state, which is the opposite of what is claimed.

Accordingly, the Applicants respectfully submit that the Examiner fails to provide any reasonable explanation as to how any motivation exists to combine the references. The Examiner merely cites piecemeal disclosure of the prior art, and then, provides a conclusory summation stating that the proposed modifications would have been obvious to one of skill in the art.

The Federal Circuit has consistently held that

... 'virtually all [inventions] are combinations of old elements.'
Therefore an examiner may often find every element of a claimed

invention in the prior art. *If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue.* Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. *Such an approach would be 'an illogical and inappropriate process by which to determine patentability.'*

In re Rouffet, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453 (Fed. Cir. 1998)
(*citations omitted*) (emphasis added).

As such, even if the prior art did disclose the recited subject matter (not admitted), the Examiner's piecemeal comparison of elements in the prior art with elements recited by the claims fails to meet the requirements of 35 U.S.C. § 103 without any proper explanation of a rationale in the cited references to motivate one to make the proposed combination.

As discussed above, the Examiner's rationale in combining the references is based on an erroneous interpretation of Andrieu. Accordingly, the Examiner's argument is factually incorrect, and further fails to explain the existence, based on factual evidence, of any motivation for the proposed combination.

Furthermore, the Applicants respectfully submit that none of the cited references disclose or suggest a power management module configured to determine whether the processor is operating in the traffic state or the idle state, and, *based on the operating state of the processor, determine whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the processor*, as recited in claim 30.

Olson discloses a power supply and switching mechanism that utilizes a first battery and a second battery to charge a load. Olson discloses a power controller 108 that controls the power

delivered to the batteries by opening and closing switches 103 and 106 in an alternating fashion via a series of pulses (control signals V_P and V_N). Olson also discloses that the power controller 108 may close the switches 103 and 106 so that the power is delivered from both batteries at the same time. See col. 5, lines 29-37 of Olson. However, there is no suggestion anywhere in Olson that the power controller 108 *determines based on the state* (standby or active) of the load whether *to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load*, as expressly required by claim 30. Olson merely varies the amount of time that the controlled power switches discharge the battery into the load by altering the pulse width of control signals V_P and V_N . See col. 9, lines 58-67 and col. 10, lines 1-47. Accordingly, Olson fails to disclose or suggest a power management module, as recited in claim 30.

Nishihara merely discloses a battery pack including a control mechanism that switches the connection of two batteries from parallel to series during a talk mode, and from series to parallel during non-talk mode. However, there is no mention whatsoever in Nishihara of a pulse current discharge mode. Thus, the battery pack of Nishihara is not configured to *determine based on the state* (talk or non-talk) of a device whether *to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the device*, as expressly required by claim 30. Accordingly, Nishihara, individually or in combination with Olson, fails to disclose or suggest at least a power management module, as recited in claim 30.

Koenck merely discloses that a current usage of a control processor is different for an idle mode and an operating mode. However, there is no mention anywhere in Koenck of a pulse current discharge mode. Thus, the control processor of Koenck is not configured to *determine*

based on the state (idle mode or operating mode) of a device whether *to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the device*, as expressly required by claim 30. Accordingly, Koenck fails to disclose or suggest at least a power management module, as recited in claim 30.

Andrieu merely discloses a device that allows discharge of electrochemical cells in a pulsed mode via a pulse train generator. However, there is no suggestion anywhere in Andrieu that the pulse train generator *determines based on the state* of the load whether *to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load*, as expressly required by claim 30. Andrieu merely applies a pulse train to the cells. Accordingly, Andrieu fails to disclose or suggest a power management module, as recited in claim 30.

Secondary reference Choo is not relied upon in the rejections of the aforementioned features recited in claim 30. Moreover, Choo fails to disclose or suggest a power management module, as recited in claim 30.

To reject claims in an application under § 103, the Examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP 2143. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicants' disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.

1991). Here, the Examiner has failed to meet all of the three criteria required for a *prima facie* case of obviousness. Specifically, the Examiner (1) failed to present any documentary evidence of motivation either in Olson, Nishihara, Koenck, Andrieu, Choo, or in the knowledge generally available to one of ordinary skill in the art, to modify Olson or to combine reference teachings; (2) the Examiner failed to show how the proposed modification of Olson has a reasonable expectation of success; and (3) the Examiner failed to show that the combined references teach or suggest all the claim limitations (e.g., a power management module configured to determine whether the processor is operating in the traffic state or the idle state, and, based on the operating state of the processor, determine whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the processor, as recited in claim 30.). As such, the Examiner has failed to establish a proper *prima facie* case of obviousness under 35 U.S.C. § 103.

B. Claims 11 and 41

For reasons similar to presented with regard to claim 30, the Applicants respectfully submit that the Examiner has failed to establish a proper *prima facie* case of obviousness with regard to claims 11 and 41. Claim 11 recites, *inter alia*, “means for determining a current required by a load; and means for determining, based on the required current, whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load.” And claim 41 recites, *inter alia*, “a power management module configured to determine a current required by a load, and, based on the required current, the power management module being further configured to determine whether to operate each of the first and second batteries in a pulse current discharge mode or to continuously couple the first and second batteries to the load.”

II. Conclusion

In accordance with the above remarks, the Applicants respectfully submit that claims 11, 30, and 41 define patentable subject matter. Claims 12-15, 31-33, 37-39, and 42-50 depend from claims 11, 30, and 41, respectively, and therefore, also define patentable subject matter, as well as for the additional features recited therein.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 11-15, 30-33, 37-39, and 41-50 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number set forth below.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Dated:

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Respectfully Submitted,

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